

Remarks

Claims 25-38, 40, and 42-47 are pending. Claims 27, 28, 29, 34, 36, 37, 38, and 40 have been amended to recite SEQ ID 2 instead of SEQ ID 1, which omits the Cys residue at 327 and has a Glu instead of a Gln residue at 336. Claims 44 and 47 have been amended to replace the Glu residue at 336 with Gln. Claim 39 has been cancelled without prejudice or disclaimer.

In keeping with the original specification, the present application indicates that "SEQ ID 1" corresponds to residues 308 to 348 of human ZP3 (see page 9, lines 11-13, *inter alia*). Figure 2 discloses residues 308 to 348 of human ZP3 but Figure 1 does not; that is, the latter omits the Cys residue at 327 and prescribes Glu instead of Gln at 336.

In responding to a notice under §§ 1.821-825, applicants inadvertently used the erroneous sequence of Figure 1 as SEQ ID NO 1. Thus, to correct this error, applicants have changed SEQ ID NO 1 to the correct sequence, which is SEQ ID NO 2. Because the foregoing amendments do not introduce new matter, entry thereof by the Examiner is respectfully requested. For the Examiner's convenience, applicants also have reproduced, in Appendix 1, a complete set of the pending claims.

Election of Species

For Claims 44-47, applicants hereby elect the amended glycoprotein of Claim 47 for initial examination. For Claims 28, 36, 37, and 38, applicants elect, for initial examination, the glycoprotein wherein the residue (m) 342 is substituted with Asn. Once the claims are deemed allowable as to the elected species, the Examiner is obliged, under applicable PTO rules, to consider a reasonable number of additional species.

Applicants reserve the right to file one or more divisional applications covering the subject matter of the non-elected claims. Receipt of the initial Office Action on the merits is awaited.

Respectfully submitted,

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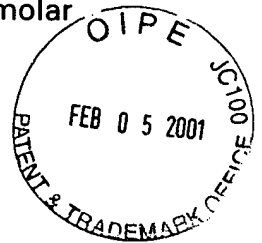
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I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office, Office of Petitions at (703) 308-6916 on the date shown below.

Date:

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25. A purified recombinant glycopolypeptide of 65kd to 100kd that comprises approximately 40% to 60% carbohydrate by weight and that can bind human spermatozoa at least 10 times as strong as an equivalent molar amount of mouse ZP3.



26. The glycopolypeptide according to claim 25, wherein the glycopolypeptide is expressed by a human ovarian cell line.

27. (Once Amended) A purified recombinant glycopolypeptide having between 41 and 400 amino acids and having an active portion that can bind human spermatozoa at least 10 times as strong as an equivalent molar amount of mouse ZP3, wherein the active portion comprises an amino acid sequence that is more than 54% homologous with SEQ ID NO: [1] 2 and has a predicted O-glycosylation site at a serine that corresponds to position 344 of the human ZP3 sequence.

28. (Twice Amended) A glycopolypeptide according to claim 27, comprising a sequence from position 310 to position 345 of SEQ ID NO: [1] 2 wherein at least one amino acid at a position selected from the group consisting of: (a)310; (b)320; (c)323; (d)326; (e)328; (f)329; (g)332; (h)334; (i)335; (j)337; (k)339; (l)341; (m)342 and (n)345 is substituted while preserving the human-species specific glycosylation pattern of the glycopolypeptide.

29. (Once Amended) The glycopolypeptide according to claim 27, wherein the amino acid sequence of the active portion is more than 75% identical with SEQ ID NO: [1] 2.

30. The glycopolypeptide according to claim 28, having between 41 and 300 amino acids.

31. The glycopolypeptide according to claim 28, having between 41 and 200 amino acids.

32. The glycopolypeptide according to claim 28, having between 41 and 100 amino acids.

33. The glycopolypeptide according to claim 28, having between 41 and 65 amino acids.

34. (Once Amended) A purified recombinant glycopolypeptide of 65kd to 100kd that comprises 40% to 60% carbohydrate by weight and that can bind human spermatozoa at least 10 times as strong as an equivalent molar amount of mouse ZP3, wherein the glycopolypeptide is obtainable by a process comprising the steps of:

(a) transducing a cell from a human ovarian cell line with a polynucleotide that encodes a polypeptide comprising a sequence that is more than 54% homologous with SEQ ID NO: [1] 2;

(b) establishing a stable-transfected cell culture for producing the glycopolypeptide; and

(c) isolating the glycopolypeptide from the cell culture.

35. The purified glycopolypeptide of claim 34 wherein the ovarian cell line of step (a) is selected from the group consisting of PA-1, EB2, CaoV-3, CaoV-4, OVCAR-3, SK-OV-3, and SW 626.

36. (Twice Amended) The purified glycopolypeptide of claim 34, wherein the polynucleotide of step (a) encodes a polypeptide comprising a sequence from position 310 to position 345 of SEQ ID NO: [1] 2 wherein at least one amino acid has been altered while preserving the human-species specific glycosylation of the glycopolypeptide.

37. (Twice Amended) A purified glycopolypeptide that comprises carbohydrate and that can bind human spermatozoa at least 10 times as strong

as an equivalent molar amount of mouse ZP3, wherein the amino acid sequence of the glycopolypeptide comprises a sequence from position 310 to position 345 of SEQ ID NO: [1] 2 wherein at least one amino acid has been altered while preserving the human-species specific glycosylation of the glycopolypeptide.

38. (Twice Amended) A glycopolypeptide that can bind human spermatozoa at least 10 times as strong as an equivalent molar amount of mouse ZP3 wherein the polypeptide portion of the glycopolypeptide is smaller than 25kd and includes a core region having a sequence shown in SEQ ID NO: [1] 2 wherein at least one amino acid has been altered while preserving the human-species specific glycosylation of the glycopolypeptide.

~~(Deleted) 39. — The glycopolypeptide of claim 38, having the sequence of SEQ ID NO: 1.~~

40. (Once Amended) A glycopolypeptide having a polypeptide portion that is smaller than 10kd and which can bind human spermatozoa with greater affinity than mouse spermatozoa, wherein the glycoprotein has a sequence comprising sequence position numbers 337 to 348 of SEQ ID NO: [1] 2.

~~(Deleted) 41. — The glycopolypeptide of claim 40, wherein one or more amino acids at positions 337; 339; 341; 342 and 345 are substituted with met; iso, met; thr; asn; and lys respectively.~~

42. A purified recombinant glycopolypeptide of 65kd to 100kd that comprises approximately 40% to 60% carbohydrate by weight and that can stimulate the acrosome reaction of human spermatozoa when co-present with the spermatozoa at a concentration of less than 1 ug/ml for a time period of less than one hour.

43. The glycopolypeptide according to claim 42, wherein the glycopolypeptide is expressed by a human ovarian cell line.-

44. (Once Amended) A purified glycopolypeptide of 65kd to 100kd that can bind human spermatozoa at a glycopolypeptide concentration below 1 µg/ml and induce an acrosome reaction within one hour upon binding, wherein said glycopolypeptide comprises an amino acid sequence that is more than 54% homologous to the following sequence:

SerTrpPheProValGlnGlyProAlaAspIleCysGlnCysCysAsnLys
GlyAspCysGlyThrProSerHisSerArgArg[Glu]GlnProHisValMetSerGlnTrpSerArgSerValSer.

45. A glycopolypeptide comprising between 41 and 400 amino acid that can bind human spermatozoa at a glycopolypeptide concentration below 1 µg/ml and induce an acrosome reaction within one hour upon binding, wherein said glycopolypeptide comprises an amino acid sequence that is at least 54% homologous to the following sequence:

SerTrpPheProValGlnGlyProAlaAspIleCysGlnCysCysAsnLysGly
AspCysGlyThrProSerHisSerArgArgGlnProHisValMetSerGlnTrp
SerArgSerValSer,

and wherein the fifth amino acid residue from the carboxyl terminus of said amino acid sequence of said glycopolypeptide is O-glycosylated.

46. The glycopolypeptide of claim 45, wherein said glycopolypeptide comprises an amino acid sequence that is at least 75% homologous to the following sequence:

SerTrpPheProValGlnGlyProAlaAspIleCysGlnCysCysAsnLys
GlyAspCysGlyThrProSerHisSerArgArgGlnProHisValMetSer
GlnTrpSerArgSerValSer.

47. (Once Amended) The glycoprotein of claim 45, wherein the glycoprotein comprises the following amino acid sequence:

SerTrpPheProValGlnGlyProAlaAspIleCysGlnCysCysAsnLysGlyAspCysGlyThrPro
SerHisSerArgArg[Glu]GlnProHisValMetSerGlnTrpSerArgSerValSer.